REMARKS/ARGUMENTS

The Office Action mailed July 13, 2006 has been received and reviewed. Each of claims 1–2, and 5-33 stands rejected. Each of claims 1, 9, 16, 21, and 26-27 has been amended and claims 13-14 are canceled herein. Reconsideration of the present application in view of the above amendments and following remarks is respectfully requested.

Substance of the Interview

Applicant thanks Examiner Blackman for conducting the interview on September 7, 2006 and for considering the arguments regarding the deficiencies of the prior art, including Taylor and Whigham. During the interview a proposed amendment that described the operations of the image computation module was presented. The examiner indicated that the arguments and proposed amendments would require further consideration or search.

Claim objections

Claims 1 and 21 are objected to for minor scrivener's errors. Claim 1 is amended to change "projected" to projection medium. Claim 21 is amended to change "a" to "the." Accordingly, Applicant respectfully request withdrawal of the claim objections.

Rejections based on 35 U.S.C. § 102(b)

A.) Applicable Authority

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdeggal Brothers v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the . . . claim."

Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). *See also*, MPEP § 2131.

B.) Anticipation Rejection Based U.S. Patent No. 3,60,641 issued to Taylor et al. (hereinafter Taylor).

Claims 1, 2, 5-6, 9-13, 16-24, 26-27, and 29-32 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Taylor. As Taylor does not describe, either expressly or inherently, each and every element of the rejected claims, as amended herein, Applicant respectfully traverses the rejection, as hereinafter set forth.

Applicant respectfully submits that independent claims 1, 9, 16, and 26 are allowable over Taylor. With respect to independent claim 1, Taylor fails to describe, among other things "an image data computation module for calculating cross-sections for the three-dimensional object." With respect to independent claim 9, Taylor fails to describe, among other things, "computing image data by calculating cross-sections for the three dimensional object and transmitting the image data to the projector to control the valves." With respect to independent claim 16, Taylor fails to describe, among other things, "imaging data computation apparatus for computing imaging data by calculating cross-sections for the three-dimensional object." With respect to independent claim 26, Taylor fails to describe, among other things, "storing imaging data for an image as a plurality of layers of imaging data."

With respect to claims 1, 9, and 16, Taylor fails to describe, among other things, the claimed requirement of calculating cross-sections that represent the three-dimensional object. Column 7, line 43-column 8, line 2, column 8, lines 21-30, FIG. 4, and FIG. 7 are relied upon to anticipate the claimed image computation. However, the cited portions of Taylor describe a timing circuit that controls the frequency at which drops are generated. While Taylor projects a

three-dimensional object; Taylor fails to anticipate the claimed embodiment because the claimed embodiment utilizes cross-section of three-dimensional object data to control the valves that project the projection medium. At best, Taylor, at FIG. 4, column 5, lines 30-40 and column 8, lines 12-25 describes a control and timing circuit for valves and lights. The control and timing circuits are utilized to allow an observer to change the three-dimensional shape of an object.

Unlike Taylor, the claimed embodiment processes the image data to form three-dimensional objects by calculating cross-sections that represent image data, which a projector utilizes to control valves of a projector that projects the projection medium. Taylor describes a timing circuit that alters the frequency of drop generating units. Taylor does not describe expressly or inherently the claimed calculation of cross-sections for the three-dimensional object. Accordingly, for at least the foregoing reasons, the anticipation rejection of claims 1, 9, and 16 should be withdrawn.

Each of claims 2, 5-8, 10-14 and 17-24 depend, either directly or indirectly, from one of independent claims 1, 9, and 16 and further define novel features of the claimed embodiment. As such, claims 2, 5-8, 10-14 and 17-24 are believed to be in condition for allowance for at least the above-cited reasons by virtue of their dependency.

With respect to independent claim 26, Taylor fails to describe, among other things, the claimed requirement of storing a plurality of layers that represent an image. Column 7, line 43-column 8, line 2, column 8, lines 21-30, FIG. 4, and FIG. 7 are relied upon to anticipate the claimed image computation. Applicant respectfully disagrees. As discussed above, the cited portions of Taylor describes controlling a frequency associated with a plurality of drop generating units to generate a three-dimensional object. Additionally, Taylor, at FIG. 5 and column 8, lines 40-45 discloses a memory that stores a data-matrix that controls the switching

means of the drop generating units. At best, Taylor discloses storing the images in matrix memory that is utilized to control a printing an image on paper. Taylor fails to describe storing the images as layers that control release of the projection medium that forms the three-dimensional object.

Unlike Taylor, the claimed embodiment expressly requires storing a plurality of layers that represent the image data. The layers of the image data are utilized to control the projector. Taylor describes storing each character of an image in an image matrix, which is utilized to control the drop generating units. Taylor does not fairly describe storing layers that represent the image data. Accordingly, for at least the foregoing reasons, the anticipation rejection of claim 26 should be withdrawn.

Each of claims 27-33 depends, either directly or indirectly, from independent claims 26 and further defines novel features of the claimed embodiment. As such, claims 27-33 are believed to be in condition for allowance for at least the above-cited reasons by virtue of their dependency.

Rejections based on 35 U.S.C. § 103

A.) Applicable Authority

The basic requirements of a *prima face* case of obviousness are summarized in MPEP §2143 through §2143.03. In order "[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success [in combining the references]. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make

the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)". *See* MPEP §2143. Further, in establishing a *prima face* case of obviousness, the initial burden is placed on the Examiner. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 USPQ 972, 972, (Bd. Pat App. & Inter. 1985)." *Id. See also* MPEP §706.02(j) and §2142.

B.) Obviousness Rejections Based on US Patent No. 5,737,860 issued to Whigham et al. (herein after Whigham) in view of Taylor.

Claims 1, 2, 5, 9-24, and 26-33 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Whigham in view of Taylor. As Whigham and Taylor, whether taken alone or in combination, fail to teach or suggest all of the limitations of independent claim 1, 9, 16, and 26, Applicant respectfully traverses this rejection, as hereinafter set forth.

Applicant respectfully submits that independent claims 1, 9, 16, and 26 are allowable over Whigham in view of Taylor. With respect to independent claims 1, 9, and 16, Whigham in view of Taylor does not teach or suggest, among other things, "calculating cross-sections for the three-dimensional object." With respect to independent claim 26, Whigham in view of Taylor does not teach or suggest, among other things, "storing imaging data for an image as a plurality of layers of imaging data."

With respect to independent claims 1, 9 and 16, the Office relies on Whigham, at col. 5, lines 35-45 and col. 7, lines 47-56 in combination with Taylor to obviate the claimed calculation

of cross-sections for the three-dimensional object. Applicant respectfully disagrees. Similar to Taylor, the cited portions of Whigham disclose a controller that causes the drops to be released at a specified frequency. In other words, the controller, at column 5, lines 50-55 provides a rate of release. There is nothing in Whigham to suggest that the controller computes cross-sections for the three-dimensional object. Instead, the controller is utilized to control the release frequency. As discussed above, Taylor does not cure this deficiency.

Unlike, Whigham and Taylor, singularly or in combination, the claimed embodiment generates image data that is calculated from cross-sections of the three-dimensional object. Whigham and Taylor do not fairly teach or suggest the claimed calculations. Instead Whigham and Taylor describe timing controls that are utilized to control a frequency or release rate associated with bubble or drop generating units. Accordingly, for at least the foregoing reasons, the obviousness rejection of claims 1, 9, and 16 should be withdrawn.

Each of claims 2, 5-8, 10-14 and 17-24 depends, either directly or indirectly, from one of independent claims 1, 9, and 16 and further defines novel features of the claimed embodiment. As such, claims 2, 5-8, 10-14 and 17-24 are believed to be in condition for allowance for at least the above-cited reasons by virtue of their dependency.

With respect to independent claim 26, Whigham, at col. 5, lines 35-45, col. 7, lines 47-56, and FIG. 9 is relied upon in combination with Taylor to obviate the claimed storing of imaging data. Applicant respectfully disagrees. Whigham, at column 5, lines 55-65 discloses a stencil or bubble matrix that is applied as a dot matrix system that generates a message. The gas or liquid is released through the stencil or matrix to form a message. At best, Whigham discloses a bubble matrix that utilizes dot matrix techniques to represent a message.

Unlike Whigham and Taylor, the claimed embodiment expressly requires storing imaging data as layers that represent an image. Whigham in view of Taylor does not disclose the claimed storing of layers associated with image. Rather, Whigham in view of Taylor provides a dot matrix system on a bubble matrix. A dot matrix system does not provide layers. Instead, the matrix provides rows and columns of dots. Accordingly, for at least the foregoing reasons, the obviousness rejection of claim 26 should be withdrawn.

Each of claims 27-33 depends, either directly or indirectly, from independent claims 26 and further defines novel features of the claimed embodiment. As such, claims 27-33 are believed to be in condition for allowance for at least the above-cited reasons by virtue of their dependency.

CONCLUSION

For the reasons stated above, claims 1-2, 5-12 and 15-33 are now in condition for allowance. Applicant respectfully requests withdrawal of the pending rejections and allowance of claims 1-2, 5-12 and 15-33. If any issues remain that would prevent issuance of this application, the Examiner is urged to contact the undersigned by telephone prior to issuing a subsequent action. The Commissioner is hereby authorized to charge any additional amount required (or to credit any overpayment) to Deposit Account No. 19-2112.

Respectfully submitted,

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